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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,148	09/18/2006	Edward W. Taylor Jr	06821/08339	1957
24024 7590 10/29/2010 CALFEE HALTER & GRISWOLD, LLP 800 SUPERIOR AVENUE SUITE 1400 CLEVELAND, OH 44114				
EXAMINER				
NEGRELLI, KARA B				
ART UNIT		PAPER NUMBER		
1766				
NOTIFICATION DATE		DELIVERY MODE		
10/29/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/566,148

**Applicant(s)**

TAYLOR JR, EDWARD W.

**Examiner**

KARA NEGRELLI

**Art Unit**

1766

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-106 is/are pending in the application.
- 4a) Of the above claim(s) 1-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 71-106 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/22)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 09/10/2010

**WATERBORNE COATINGS ANG FOAMS AND METHODS OF MAKING THEM**

**DETAILED ACTION**

***Response to Amendment***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Any rejections stated in the previous Office Action and not repeated below are withdrawn.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on September 10, 2010. In particular, claims 1-70 have been cancelled, and claim 71 includes the limitation that a polymer resin capable of reacting with a curing agent to form a solid binder, a curing agent which is a waterborne polyamine, polyamide, or polyamide-amine, and a sulfonylhydrazide blowing agent are combined and the mixture so made forms a polymer foam at a temperature of about 1°C to about 60°C.
4. It is noted that the newly introduced limitations were not present at the time of the preceding action. For this reason it is proper to make the present action FINAL.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 93 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claim 93 depends from claim 72 and recites "the foam of claim 72..." It is noted that claim 72 teaches a method and not a product.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 71-76, 82-85, 88-90, 92, and 94-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pollock et al. (US 4,454,248).
10. Pollock et al. teach a method for producing a foam comprising foaming and curing a polyepoxide resin with closed cells. A resin mixture or system which is hardenable and curable can be given its initial cure at a relatively low temperature such as room temperature. The partially cured resin according to the invention would cure at room temperature over a prolonged period of time (see column 2, lines 19-25, lines 39-42, and lines 56-58). According to the invention of Pollock, the resin is mixed with a foaming agent in an amount sufficient to develop the desired foam. The mixture is B-staged by curing at a relatively low temperature (Pollack describes a "relatively low

temperature" as room temperature, see column 2, lines 40-41). The temperature is maintained for a time sufficient to foam and partially cure to produce closed-cell foam material (see column 3, lines 6-11).

11. Pollock et al. teach that polymeric epoxide resin preferably comprise bisphenol A (column 9, lines 27-30). It is particularly preferable in the invention of Pollock et al. that the polyepoxides are reacted with a small amount of curing agent (forming a binder) less than the amount necessary to harden and cure the resin. The polyepoxide is reacted prior to foaming and mixing with a hardening curing agent (column 11, lines 49-52). A preferred curing agent is an amine curing agent used in combination with the bisphenol A (column 12, lines 33-40). Examples of the blowing agents useful in the invention of Pollock et al. include Celogen blowing agents such as, for example, benzenesulfonylhydrazide blowing agents (column 12, lines 60-67). Celogen blowing agents also include p-toluenesulfonylhydrazide. The blowing agent may be present in an amount of 10 to 30 parts by weight per 100 parts of the polyepoxide resin. The curing agent may be present in an amount of 15 to 35 parts by weight per 100 parts epoxy resin. Pollock et al. further teach the incorporation of a suitable filler such as titanium dioxide, which is described in the instant specification as an endothermic filler which provides fire retardant properties to the foam to which it is added (see column 14, lines 35-41).

12. In an embodiment of the invention of Pollack et al., the thermosetting resin is mixed with a foaming agent and other fillers at a relatively low temperature usually in the range of from 70°F to 180°F (about 21°C to about 82°C) for a time sufficient to foam

and partially cure the mixture (column 15, lines 33-45). As discussed in the invention of Pollack et al., the partially cured resin according to the invention would cure at room temperature over a prolonged period of time (see column 2, lines 19-25, lines 39-42, and lines 56-58). The temperature at which the foam of Pollack et al. is foamed and cured overlaps the instantly claimed ranges of 1°C to 60°C, 1°C to 40°C, and 15°C to 30°C. The amount of blowing agent of Pollack et al. overlaps the amount of blowing agent of instant claims 84-85. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

13. It is noted that while claims 92-94 claim a foam, all elected claims are recited in the product-by-process format by use of the language, "A foam produced by the method of..." or "...wherein the foam is formed by..." Case law holds that:

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

14. To the extent that the process limitations in a product-by-process claim do not carry weight absent a showing of criticality, the Pollack et al. discloses the claimed product in the sense that the prior art product structure is seen to be no different from that indicated by the claims.

15. It is noted that "waterborne" is described in the instant specification as a solution or an emulsion on page 3, lines 20-21 of the instant specification. Pollack et al. teach that the resin, curing agent, and foaming agent mixture may further comprise solvents, the solvent of which may comprise water and thus, the resin mixtures of Pollack et al. are waterborne foamable resins (pertaining to instant claims 98-103). See column 15, line 40 and column 18, lines 20-25 and lines 50-55.

16. Claims 76 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollock et al. (US 4,454,248) and further in view of Agarwal (US 2003/0018095).

17. Pollack et al. teach the composition as applied to claim 71-72 above but do not expressly teach that the epoxy resin is bisphenol F. However, Agarwal teaches structural adhesive foams comprising an epoxy resin, a sulfonylhydrazide blowing agent, and an amine-epoxy adduct curing agent in which the epoxy resin may comprise either bisphenol A or bisphenol F, which are both polyhydric phenols (paragraph [0012]). The only difference between bisphenol A and bisphenol F is the substitution of a hydrogen with a methyl group in the interior of the polyhydric phenol molecule which does not affect the molecule(s) reactivity with the epoxide functional group. In view of Agarwal's recognition that bisphenol A and bisphenol F are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute bisphenol A with bisphenol F and thereby arrive at the present invention. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency

is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

18. Claims 77-78, 80, and 87 rejected under 35 U.S.C. 103(a) as being unpatentable over Pollock et al. (US 4,454,248) and further in view of Klippstein (US 5,854,312).

19. Pollack et al. teach the composition as applied to claim 71-72 above but do not expressly teach that the curing agent is a transaminated Mannich base or an emulsion of an epoxy adduct of a polyamine. However, Klippstein teaches aqueous hardeners for epoxy resin systems comprising aqueous emulsions of active amino-groups displaying epoxide as hardeners for epoxy resin systems, characterized in that an aqueous solution of a conventional hardener which contains reactive amino groups can emulsify the epoxy resin used for adduct formation. Klippstein further teaches it is especially advantageous to use epoxy adducts of transaminated Mannich bases (see column 2, lines 19-40). Klippstein et al. further teach that highly suitable hardeners further include epoxy adducts of polyamide-amines (column 3, lines 29-31). The hardener is added to an epoxy resin which is formed into liquid via dispersion in water (i.e. is a latex).

20. It would have been obvious at the time the instant invention was made to use the aqueous emulsions of active amino groups displaying oxide adduct hardeners, as taught in Klippstein, in the invention of Pollack because the curing agents of Klippstein are of low toxicity, favorable curing behavior at low temperatures (which is desired in the invention of Pollack), and reduced drying times, as well as other advantages (column 2,



lines 13-18). The emulsions of Klippstein also provide enhanced strength and chemical resistance (column 5, lines 43-44).

21. Claims 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollock et al. (US 4,454,248) and Klippstein (US 5,854,312) and further in view of Hansen et al. (US 5,032,629).

22. Pollack et al. and Klippstein teach the composition as applied to claim 77-78 above but do not expressly teach that the curing agent is an emulsion of an epoxy adduct, wherein the adduct is epichlorohydrin. However, Hansen et al. teach hardening agents for epoxy compounds in which a polyalkylene polyether amine is reacted with a di and/or polyepoxy compound, and the preliminary product is further reacted with a primary or secondary amine (see abstract). As amine components for the first reaction, polyalkylene polyethermonoamines and/or diamines are used. The basis of the polyalkyl polyether units may be ethylene oxide, propylene oxide, butylene oxide, or amylene oxide with monovalent or polyvalent alcohols (column 3, lines 28-37). Preferred epoxy compounds are the reaction products of epichlorohydrin and bisphenol A or bisphenol F (column 4, lines 25-26). The epoxy adduct hardeners so formed are emulsified by addition of water (column 2, line 65 – column 3, line 1).

23. It would have been obvious at the time the instant invention was made to use the hardeners of Hansen et al. in the invention of Pollack because the hardeners of Hansen et al. have a low viscosity, excellent shelf life, and outstanding hardening properties. The products are reactive hardening agents for epoxy resins with specifically adjustable,

constant hardening properties which can be employed for specific purposes over a broad range of temperatures down to about 0°C as well as elevated temperatures. The hardened products obtained are outstanding for their good mechanical properties and excellent stability to chemicals and aging (column 2, lines 14-22). This would be useful in Pollack because Pollack desires curing at temperatures of about 21°C to about 82°C.

24. Claims 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollock et al. (US 4,454,248) and further in view of Hansen et al. (US 5,032,629).

25. Pollack et al. teach the composition as applied to claim 71-72 above but do not expressly teach that the curing agent is an emulsion of an epoxy adduct, wherein the adduct or the epoxy adduct is the reaction product of poly (alkylene oxide) monoamine or diamine and a di or polyepoxide which is then reacted with a polyamine or a polyamide or the reaction product of a poly(alkylene oxide) monoalcohol and a polyepoxide which is then reacted with a polyamine or polyamide. However, Hansen et al. teach hardening agents for epoxy compounds in which a polyalkylene polyether amine is reacted with a di and/or polyepoxy compound, and the preliminary product is further reacted with a primary or secondary amine (see abstract). As amine components for the first reaction, polyalkylene polyethermonoamines and/or diamines are used. The basis of the polyalkyl polyether units may be ethylene oxide, propylene oxide, butylene oxide, or amylene oxide with monovalent or polyvalent alcohols (column 3, lines 28-37). Preferred epoxy compounds are the reaction products of epichlorohydrin and bisphenol

A or bisphenol F (column 4, lines 25-26). The epoxy adduct hardeners so formed are emulsified by addition of water (column 2, line 65 – column 3, line 1).

26. It would have been obvious at the time the instant invention was made to use the hardeners of Hansen et al. in the invention of Pollack because the hardeners of Hansen et al. have a low viscosity, excellent shelf life, and outstanding hardening properties. The products are reactive hardening agents for epoxy resins with specifically adjustable, constant hardening properties which can be employed for specific purposes over a broad range of temperatures down to about 0°C as well as elevated temperatures. The hardened products obtained are outstanding for their good mechanical properties and excellent stability to chemicals and aging (column 2, lines 14-22). This would be useful in Pollack because Pollack desires curing at temperatures of about 21°C to about 82°C.

27. Claim 86 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollack et al. (US 4,454,248) and further in view of Nishimura et al. (US 5,356,961).

28. Pollack et al. teach the composition as applied to claim 71-72 above but do not expressly teach that the curing agent is present in an amount of 30-70% by weight based on the total composition. However, Nishimura et al. teach an epoxy resin material cured using an amidoamine curing agent in which the epoxy resin may comprise bisphenol A or bisphenol F in which the curing agent is present in an amount of 40-170 and preferably 80 to 120 parts by weight based on 100 parts by weight of the epoxy resin to be cured. See column 3, lines 50-61 of Nishimura et al.

29. Both Nishimura et al. and Pollack et al. teach epoxy resin compositions comprising bisphenol A in which the epoxy resin compositions are cured using an amine-containing curing agent. It would have been obvious at the time the instant invention was made to use the amount of curative disclosed in the invention of Nishimura et al. in the composition of Pollack et al. because the aqueous resin composition has a high curing rate, excellent appearance (column 3, lines 62-63); is free from problems including harmfulness to human beings and free from possibility of such hazard as fire or explosion; and has a short curing time, low viscosity, and favorable workability (column 2, lines 22-31).

30. Claim 91 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollack et al. (US 4,454,248) and Hansen et al. (US 5,032,629) and further in view of Nishimura et al. (US 5,356,961).

31. Pollack et al. and Hansen et al. teach the composition as applied to claim 79-81 above but do not expressly teach that the curing agent is present in an amount of 40-60% by weight based on the total composition.

32. It would have been obvious at the time the instant invention was made to use the hardeners of Hansen et al. in the invention of Pollack because the hardeners of Hansen et al. have a low viscosity, excellent shelf life, and outstanding hardening properties. The products are reactive hardening agents for epoxy resins with specifically adjustable, constant hardening properties which can be employed for specific purposes over a broad range of temperatures down to about 0°C as well as elevated temperatures. The

hardened products obtained are outstanding for their good mechanical properties and excellent stability to chemicals and aging (column 2, lines 14-22). This would be useful in Pollack because Pollack desires curing at temperatures of about 21°C to about 82°C.

33. It would have been obvious at the time the instant invention was made to use the amount of curative disclosed in the invention of Nishimura et al. in the compositions of Pollack et al. and/or Hansen et al. because the aqueous resin composition of Nishimura et al. has a high curing rate, excellent appearance (column 3, lines 62-63); is free from problems including harmfulness to human beings and free from possibility of such hazard as fire or explosion; and has a short curing time, low viscosity, and favorable workability (column 2, lines 22-31).

### ***Response to Arguments***

34. Applicant's arguments with respect to previously presented claims 1-70 have been considered but are moot in view of the new ground(s) of rejection. Claims 1-70 have been cancelled and claim 71 specifies that the foam of the invention is formed (foamed) at a temperature of about 1°C to about 60°C. However, the unexpected results discussed on pages 8-9 of the Remarks filed September 10, 2010 are discussed below.

35. Applicant argues that the provided literature, "Celogen OT Foaming Agent Product Data," indicates that the normal decomposition temperature of a Celogen OT blowing agent can be lowered by the addition of certain chemical activators, such as triethanol amine, only to a temperature as low as 125°C. Applicant argues that Agarwal does not suggest that the decomposition temperatures of Celogen blowing agents may

be lowered to the temperatures of the instantly claimed invention, i.e. foaming at 60°C, 40°C or less, or 15°C to 30°C.

36. While the applicants' arguments regarding the lack of disclosure in Agarwal of foaming at temperatures of 60°C or below may be accurate, Pollack et al. specifically teaches foaming at temperatures of 70°F to 180°F, using a sulfonyl hydrazide blowing agent, as discussed in the rejection above. Thus, the room temperature foaming described in the instant claims is not unexpected, because the result which is allegedly unexpected is specifically disclosed in the prior art.

### ***Conclusion***

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

38. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARA NEGRELLI whose telephone number is (571)270-7338. The examiner can normally be reached on Monday through Friday 9:30 am EST to 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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